

REMARKS

Favorable reconsideration of this application is respectfully requested, wherein Claims 2, 3, 5, 10, 15, 16, and 23 have been amended, Claims 9, 22, 24, and 26 have been canceled from the application, and new Claims 30-36 have been added to the application.

The sole rejection remaining in this application is the rejection of Claims 2, 3, 5, 9, 10, 15, 16, 22-24, and 26 under 35 U.S.C. § 103(a) as being unpatenable over U.S. Patent No. 6,253,554 to *Kobayashi et al.* in view of U.S. Patent No. 5,611,197 to *Bunker*, and optionally in view of U.S. Patent No. 5,498,133 to *Lee*.

As an initial matter, Applicants express gratitude to the Examiner for the courtesies granted to Applicants' attorney during the recent interview. During the interview, two new independent claims, Claims 30 and 32 were discussed. With respect to independent Claim 30, Applicants argued that the combination of *Kobayashi* and *Bunker* would not teach having two cooling steps, once before the air is flown through the thermally loaded components, and one after the air has flown through the thermally loaded components. However, the Examiner maintained his position that one having ordinary skill in the art would have combined the two references for the same reasons as set forth in the Official Action. Nevertheless, for the reasons set forth below, Applicants respectfully disagree with the Examiner.

Claim 30, as presented during the interview, and as presented in this amendment, is directed to a method for cooling a gas turbine system comprising a compressor that takes in suction air on the inlet side and compresses it to compressor end air that is available on the outlet side, a combustor in which a fuel is burned by using the compressor end air while resulting in the formation of hot gas,

as well as a turbine in which the hot gas is expanded while providing work output, the method comprising removing compressed air from the compressor; cooling the removed air; feeding the cooled removed air through thermally loaded components of the combustor and/or the turbine inside an internal cooling channel; cooling the air after it has passed the thermally loaded components; compressing and adding the air to the compressor end air; wherein, in the manner of a targeted leakage, a small portion of the removed air is fed for film cooling into the turbine stream through drilled cooling openings provided on the components.

As discussed during the interview, *Kobayashi* teaches the removal of air from a compressor, cooling the removed air, and feeding the removed air after the cooling through thermally loaded components of a turbine. A part of the air is compressed and added to the compressor end air after having flown through the thermally loaded components. However, as conceded by the Examiner, *Kobayashi* does not teach cooling the air a second time after it has passed through thermally loaded components and before it is compressed. *Kobayashi* does not teach cooling the air a second time after it has passed though the thermally loaded components and before it is compressed. In fact, *Kobayashi* fails to provide any useful application of such an additional cooling step.

The Examiner seeks to rely on *Bunker* for teaching cooling the air after it has passed through the thermally loaded components. *Bunker* discloses removing air from a compressor, feeding the removed air through thermally loaded components of a turbine, cooling the air after it has passed though thermally loaded components, and feeding the cooled air back into the compressor at a location of lower pressure than the location where the air has been removed. However, *Bunker* discloses only

one cooling step, and gives absolutely no suggestion to cool the removed air before it is fed through the thermally loaded components.

As such, even if one having ordinary skill in the art would to combine the teachings of *Kobayashi* and *Bunker*, each reference discloses only one cooling step, either before or after the air is fed through the thermally loaded components. As such, starting from one document, and combining the other, one having ordinary skill in the art would either replace the cooler of *Kobayashi* which is arranged upstream of the thermally loaded components, with the cooler of *Bunker*, which is arranged downstream of the thermally loaded components, or he would replace the cooler of *Bunker* with the cooler of *Kobayashi*.

Moreover, the Examiner states that "there is nothing in the art that would prohibit the further cooling in the second cooling line, especially when considered in light of the teachings on *Bunker*". However, this is simply not enough to establish a *prima facie* case of obviousness. The mere fact that a prior art reference can be modified is not sufficient to establish a *prima facie* case of obviousness. See §2143.01, wherein it states in bold capitalized letters "**FACT THAT REFERENCE A PRIMA FACIE OBVIOUSNESS**". The Examiner has simply failed to provide any credible evidence as to why this is the case. The only apparent reasoning the Examiner provides to combine the two references is the statement that it would have been obvious to employ a cooler in the return line, in order to cool the return line and match the temperature of the cooling air to that within the compressor. However, there is nothing in *Kobayashi* indicating that the temperature in second line cannot match the temperature to that within the compressor. To the contrary, one having ordinary skill in the art would understand that applying an appropriate cooling power

in the cooler of *Kobayashi* would lead to the effect that the return air in the second line matches the temperature of the air in the compressor. As such, the Examiner's reasoning for combining the two references simply fails. Accordingly, neither *Kobayashi* nor *Bunker*, in combination or alone, disclose the patentable features of independent Claim 30.

Claims 33-36 recite similar features to that recited in Claim 30. In particular, Claims 33 and 36 recite "first cooling lines" and "second cooling lines". Similarly, Claims 34 and 35 recite two cooling steps, one before the air is directed through the thermally loaded components, and one after the air has flown through the thermally loaded components. For the same reasons set forth with respect to independent Claim 30, Claims 33-36 are not obvious in view of *Kobayashi* and *Bunker*.

As mentioned above, new independent Claim 32 was also discussed during the interview. Claim 32 includes the recitation of two cooling steps, as defined in independent Claim 30. However, in addition, Claim 32 recites "removing more heat from the air in the cooling steps than is transferred into the air while flowing through the thermally loaded components to an extent as to lower the temperature of the compressor end air below that without adding the removed air." The Examiner appeared to agree that the art currently of record did not disclose this feature.

In particular, *Bunker* teaches to size and reconfigure the recooling such that the air re-injected into the compressor matches in temperature to the compressed air flowing therethrough at the injection stage. As such, the compressor end air is not lowered, but remains constant. Accordingly, neither *Kobayashi* nor *Bunker*, in combination or alone, disclose the patentable features of independent Claim 32.



For at least the foregoing reasons, it is submitted that the method and apparatus of independent Claims 30 and 32-36, and the claims depending therefrom, are patentably distinguishable over the applied documents. Accordingly, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should the Examiner have any questions with regard to the above, the Examiner is requested to contact the undersigned at the number indicated below.

Respectfully submitted,

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Date: September 20, 2004

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